

## V. CONDUIT TO CARE RECOMMENDATIONS

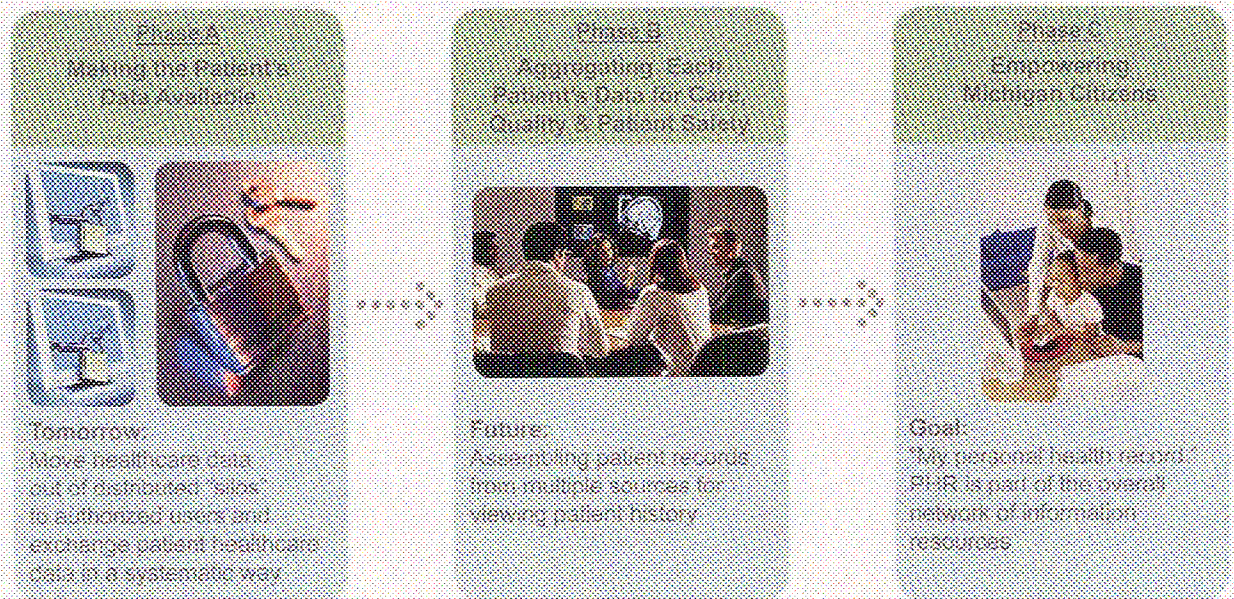
From the Workgroup discussions, it became apparent that an incremental approach would be needed to reach our goal. This type of incremental approach allows the HIE to show early progress, create value, and maintain momentum and focus on mid-term and long-term activities prioritized by criteria such as urgency and feasibility. Also, any successful long-term HIE initiative must be consumer-focused, involve consumers early and enable consumers to make more fully informed choices in their own care. Therefore, it is critical that each regional HIE effort:

- Has an effective plan for consumer participation and education
- Ensures privacy and security needs are met in compliance with the law
- Identifies core values and goals associated with the HIE
- Promotes Sustainability (organizationally and financially)
- Increases Quality and Performance of Health Care

### Evolution of the Electronic Patient Health Record

An essential characteristic of the recommendations found in the *Conduit to Care* is the focus on the patient. Specifically, their clinical data and its electronic transformation into ever-improving completeness at the point of care, clarity, communication, organization and presentation to serve not only the needs of the patient, but their physician(s) and others involved in their care and health. The three phases (A, B and C) outlined below, provide the schematic focal point of the *Conduit to Care* report demonstrating the phases and direction for the foundation and development of Michigan's health information exchange initiatives.

Diagram A: Evolution of the Electronic Patient Health Record







### **Phase A: "Making the Patient's Data Available"**

Move health care data out of non-connected distributed "silos" (e.g. labs, pharmacies, payers, hospitals, etc.) to authorized users and exchange patient health care data in a systematic way.


### **Phase B: "Aggregating Each Patient's Data for Care, Quality and Patient Safety"**

Assembling patient records from multiple sources for viewing patient's histories using standardized data.

### **Phase C: "Empowering Michigan Citizens"**

Patients have the choice to maintain and manage their health information through a private, secure and confidential environment – "my personal health maintenance record".

The following descriptive materials have been organized into three phases (A-B-C) and, one or two stages of development for each of the phases. Each phase, and the stages within, correspond to a logical sequence of HIE activities and services expected in new regional initiatives in order to address the goals and principles outlined in this report. The phases and the stages are not intended to be prescriptive, but are recommendations of sequence based on the analysis of a few of the strongest community wide HIEs in the U.S. and on the priorities reflected in the *Conduit to Care* workgroup activities. Therefore, the outline for each of the phases is as follows:

- 
- I. Phase
    - a. Stage 1 – Current State and Today's Scenario
    - b. Stage 1 – Future State and Tomorrow's Scenario
    - c. Stage 2 – Current State (where applicable)
    - d. Stage 2 – Future State (where applicable)
  - II. Impact (Benefits and Beneficiaries)
  - III. Challenges (Legal, Technical and Financial)





## Phase A: Making the Patient's Data Available

There are two stages within Phase A. The first stage streamlines the current process of results delivery. The second stage provides electronic interfaces of the patient's data directly into the physician's EMR.

### Stage 1 - Current State

In today's health care system, clinical results and reports are delivered to the requesting physician from each of the clinical service providers to which a physician refers their diagnostic and therapeutic work using a wide variety of methods – faxing, courier, telephone, direct line printers, and mail. Each clinical service provider (e.g., hospitals, laboratories, imaging centers and specialty testing centers) has their own results delivery processes(s) specific to the recipient of the information. Errors and inefficiencies can be introduced in the current results delivery process: the wrong result is sent to the provider, no result is sent, the result is delayed, results are not sent to 'copy to' physician, and the transmission is interrupted and resulting in duplicate or partial reports.

Clinical service providers typically have complex, non-closed loop mechanisms for the delivery of hundreds or thousands of results and reports on a weekly basis in various forms, all of which do not assure the delivery and receipt of results and reports. When the physician's practice does not get the results – an "error correction process" (or 'call back') begins. The 'call back' process begins with individuals in both organizations engaged on the phone or other means to correct the problem taking a great deal of time.

In the error prone, non-closed loop process, inefficiencies can be abundant; additional or duplicate testing may be done to solve the problem, repeat visits or phone follow up may be required, staff time is wasted, the physician does not have timely and reliable access to data for decision making, costs may increase and the patient may get frustrated. An example of the current state is described below.

### Stage 1 - Today's Scenario

The patient, Mary, arrives at the orthopedic surgeon's office for her scheduled pre-op appointment for knee replacement surgery. The surgeon, Dr. Smith, is made aware that Mary is waiting in the exam room. He plans to view Mary's knee films and laboratory results that were completed two days ago. The x-rays are available, but the surgeon cannot find Mary's laboratory results. The surgeon asks the nurse to call the laboratory to obtain the patient's results. The nurse calls and the line is busy. After several attempts, the nurse finally reaches the laboratory, and after waiting for the results to be located, the nurse now awaits a fax copy of the results. Due to the unavailability of the laboratory results, Mary's appointment time is now past, she is anxiously waiting for clearance for surgery, and the surgeon's schedule has to be adjusted to see Mary once the results are received.

The current state example described above is not the "best practice" for patient care. The recommended changes to streamline the current process are described below in Stage 1 – Future State.

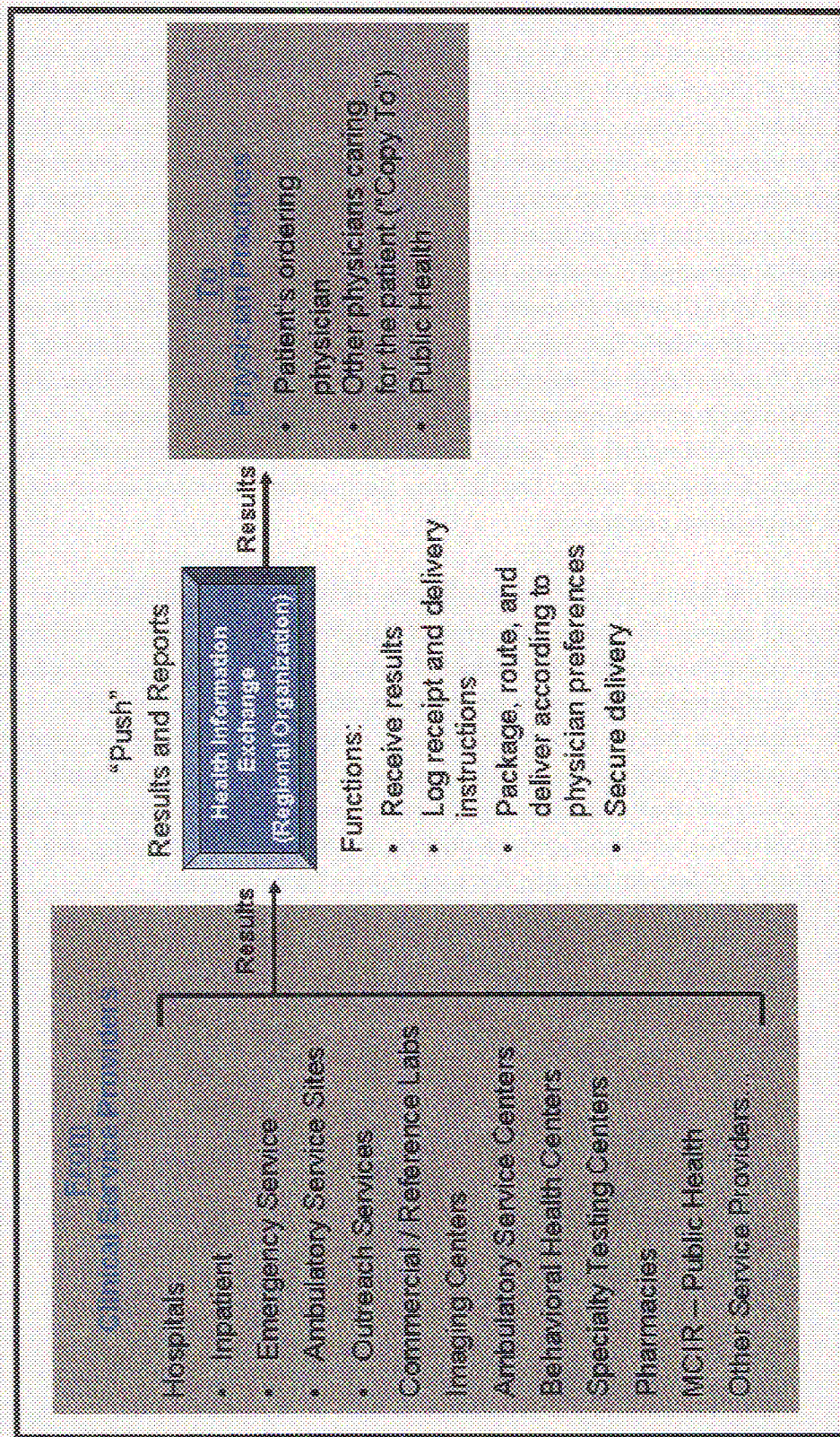
### ***Stage 1 - Future State***

A regional health information exchange is formed and contracts are completed to provide a new results delivery service for any and all clinical service providers. The HIE maintains a comprehensive directory of detail authorization and delivery instructions, as well as a directory of all customers (physician practices, clinicians and other care providers). Each clinical service provider works with staff from the HIE to direct their results, and reports transactions to the regional HIE for delivery to the clinical service provider's customers according to instructions that they received from the ordering physician. The physician practice may specify exactly what method or methods they want to be used to deliver the results and reports to their practices (e.g., faxing, printer, computer or other methods supported by the HIE as per a contract with the clinical service provider). Optional services may be provided to the clinical service providers including delivery to public health or deliveries from public health to physician practices under other contracts. The HIE will provide various interface reports, receipt and logging processes documentation, delivery and call back reports and central call center services for to address physician practice calls and clinical service providers issues. The HIE may also provide reprint services directly from the HIE interface or from the physician practice site.

These services will streamline the results delivery process, thereby reducing the current costs and reducing future enhancements required to provide high levels of customer service. When the HIE is fully operational the information exchange will reduce the number of varying delivery processes, reduce the number of "call back" and "error correction" processes for physician offices and reduce the heavy emphasis on the need for tracking as delivery error rates decrease. It should also provide management reports for clinical service providers on the volume of delivery services, callbacks, costs and quality improvements. The HIE working with their customers and the physician practices will also be able to reduce costs, improve the call-back environment, provide tracking and management reporting, and address timeliness and reliability issues with direction and support from their customers.



Diagram D: Phase A - Stage 1 - Making the Patient's Data Available



Note: Clinical Service Providers will achieve a range of benefits that vary greatly across the region, from minimal to dramatic improvements. This range is due to differences in current results delivery processes and the extent to which regions incorporate HIE related processes

### ***Stage 1 - Tomorrow's Scenario***

The patient, Mary, arrives at the orthopedic surgeon's office for her scheduled pre-op appointment for knee replacement surgery. The surgeon, Dr. Smith, is made aware that Mary is waiting in the exam room. *Mary had pre-operative diagnostics performed a few days ago and is waiting for Dr. Smith's review.* Since the x-rays and the laboratory results have already been incorporated in to Dr. Smith's workflow they are available for Mary's office visit and he is able to complete her office visit in a timely and efficient manor.

### **Stage 2: Building Upon Phase A Stage 1 – Making the Patient's Data Available (to physician practice electronic medical records)**

#### ***Stage 2 - Current State***

With the increasing adoption of electronic medical records by physicians, clinical service providers (e.g. hospitals and labs) are experiencing the first requests from physician practices for electronic interfaces of results and reports to their newly acquired electronic medical records. The increased number of requests are rather new, over the last few months or years for some clinical service providers. However these requests are not so new for the large national and regional labs that have been receiving these same requests experienced and have been providing these interfaces for some time.

The national focus on, and promotion of, EMRs to physicians with reported reimbursement increases, incentives and other encouragement have generated significant interest and increase in purchase of such systems. The national averages of EMR market penetration are reported at less than 20 percent. As more of these practices purchase and implement EMRs they will experience the same surprise as many, the EMRs do not contain all of a patient's data immediately. Specifically no results from outside their practice like lab, radiology, medication history, hospital results or reports; or results from referrals to other physicians are available until they are manually entered into the system.

#### ***Stage 2 - Today's Scenario***

The experience of many clinical service providers, which have been involved with creating these interfaces, has been that they are expensive, time consuming and unpredictable. The physician practices generally do not have any experience with clinical interfaces nor do they have experienced staff to assist with the projects. Many were unaware of the necessity, difficulties and costs of interfaces when they bought the application or were told they would be developed by their vendors. Interface project costs of ten, twenty or thirty thousand dollars per practice are frequently experienced and EMR vendor support for interfaces can be inconsistent. Some clinical service providers have delayed or postponed dealing with the physician practice requests for interfaces because of the number of requests or are providing a portal instead.

All of this equates to the physician practices having to wait for interfaces, use multiple portals, scan paper results into their EMRs, essentially containing with additional processes not simplifying or streamlining processes. It is envisioned that national standards and the Certification Commission for Health Care



Information Technology (CCHIT)<sup>3</sup> will require physician practice EMRs to have these interoperable electronic results delivery software components. The current state example described above is not the "best practice" for patient care. The recommended changes to streamline and simplify the use of HIT with HIE are described below in Stage 2 – Future State.

### ***Stage 2 - Future State***

The regional HIE will provide results and report interfaces to physician practice EMRs from clinical service provider results being delivered to the HIE in Stage 1. These interfaces could be provided to any physician practice from all clinical service providers wishing to have these interfaces developed and implemented.

In this stage the regional HIE will assist with electronic interfaces of the clinical, patient registration and record identification information to the physician practice's HIT application (e.g. practice management, electronic medical record and e-Prescribing applications). These interfaces would be facilitated by the HIE staff and system services and the respective application vendors. This service will provide significant improvement in the integration of patient data with specific HIT application. Specifically, lower costs of interfaces to all participants, reduction of certain barriers of adoption to EMRs and e-Prescribing applications by physician practices and provide the pathway for improvements in the quality and depth of clinical data in EMRs.

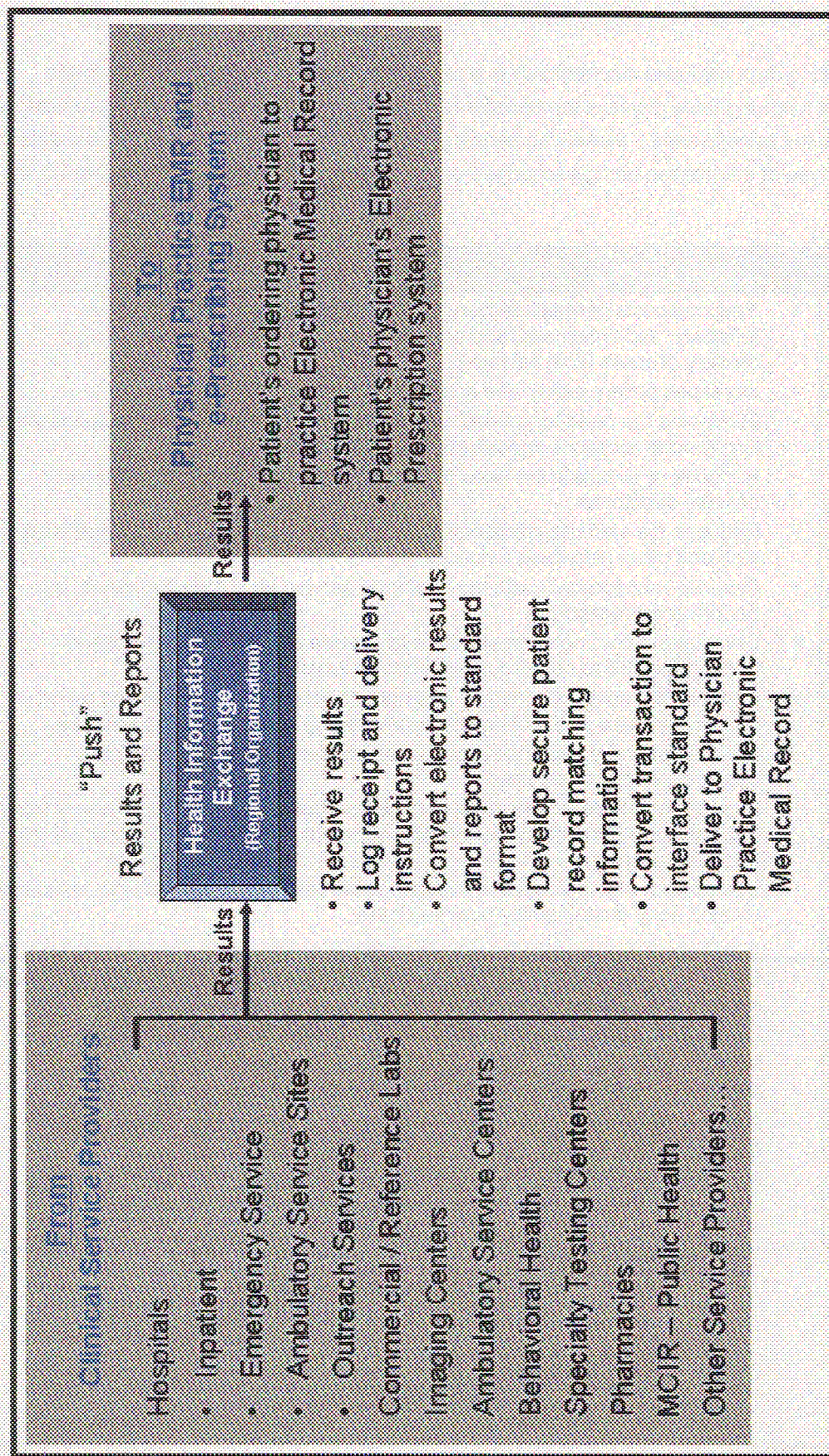
The various regional HIE efforts and the state-wide MiHIN Resource Center can dramatically improve the environment for EMRs and e-Prescribing through the development of sharable interface libraries, innovative contract terms with EMR vendors in Michigan, as well as standardized interfaces from national laboratories and pharmacies, and pharmacy benefit managers.

---

<sup>3</sup> Certification Commission for Healthcare Information Technology (CCHIT) is the recognized certification authority for electronic health records and their networks, and an independent, voluntary, private-sector initiative. <http://www.cchit.org>.



Diagram E: Phase A - Stage 2 - Making Patient's Data Available (to physician practice electronic medical records)





### **Impact of Phase A**

The impact of making data available electronically is a significant change providing benefits to the beneficiaries. The following table displays the benefits of making patient data available electronically and also demonstrates the beneficiaries – those who benefit. Some beneficiaries have stronger benefits than others due to the type of information being exchanged or the direction of the flow, as highlighted in the following table.

Beneficiaries	Benefits
Clinical Service Providers (e.g. hospitals, laboratories, image centers and specialty testing centers)	<ul style="list-style-type: none"><li>• Reduces costs of result delivery by clinical service providers, improve reliability, and timeliness, and provide a uniform high quality automated delivery process (cost savings)</li><li>• Increases patient safety and quality of service</li><li>• Eliminates the need for myriad redundant communication network connections to physician locations specifically for reports and results</li><li>• Reduces or eliminate the need for the maintenance of multiple provider delivery directories</li><li>• Reduces the staff requirements at the clinical service providers for call back staff and other help desk functions</li><li>• Provides management with the customer service level measurements and performance monitoring</li><li>• Leverages a common infrastructure to provide multiple delivery options through the HIE to numerous locations and customers</li><li>• Reduces the costs of continual internal enhancements to result and report delivery systems and technology by leveraging the shared infrastructure</li><li>• Builds trust and experience among stakeholders in the HIE during this beginning phase of service</li><li>• Provides a vehicle for the delivery of clinical data and medication history from National Labs, Pharmacy Benefit Management Companies, Pharmacy retail, and referral centers</li><li>• Lowers cost and increases immediate value (esp. to clinical service providers) creates early-sustainability business case</li></ul>
Physicians	<ul style="list-style-type: none"><li>• Offers “one point of contact” for physician offices to follow up with if any clinical results have not been delivered</li><li>• Decreases time looking for data and information – timely receipt of results</li><li>• Mirrors current clinical work flow with new technology through HIE</li><li>• Requires little or no change in current technology by physicians offices</li><li>• Provides an enhanced result delivery service with tracking mechanisms capable of supporting problem resolutions regarding result status</li><li>• Provides physician practice reprint services to reduce “call backs” to clinical service providers for reports that are misplaced or locally unavailable</li><li>• Provides a uniform high quality channel for public health clinical reporting</li></ul>



Beneficiaries	Benefits
Patients and Families	<ul style="list-style-type: none"> <li>• Reduces the duplication and time consumption of carrying patients' records to and from a primary care physician to the specialist</li> <li>• Provides care providers with more access to complete data (improved outcomes)</li> <li>• Reduces the wait times due to "call backs" or searching for the patient's clinical results, referral documents</li> <li>• Exports patient's clinical information from clinical service provider "silos" into a HIE delivery technology which improves delivery to all the patient's physicians and the ability to retrieve and reprint when needed to save time</li> <li>• Provides the ability to forward to other physicians or care delivery sites through a request to their physician</li> </ul>
Public Health	<ul style="list-style-type: none"> <li>• Benefits similar to physicians (increased delivery time of results, reduction in errors, etc.)</li> <li>• Ability to use the HIE results delivery system to deliver similar transactions to public health agencies when authorized or required.</li> <li>• Ability for public health to deliver results and reports to specific physician practices</li> <li>• Possible channel for public health communications to and from county public health as well as state public health agencies if an HIE is up and running in a region</li> </ul>
Payers	<ul style="list-style-type: none"> <li>• Lowers costs due to the potential decrease in missing or unavailable test results, overall resulting in a reduction of duplicate tests</li> </ul>
Employers	<ul style="list-style-type: none"> <li>• Potential for reduced premiums as a result of reduced duplicative testing</li> </ul>

### **Challenges of Phase A**

The most critical legal, technical and financial challenges in making data available are detailed below. In order for this phase to succeed, these challenges will need to be addressed.

#### **Legal Challenges / Issues**

Legal issues related to the formation, organization, and funding of a HIE:

- In forming an HIE, numerous legal issues arise such as corporate form, system governance, who participates, terms of participation, criteria for violation, sanctions, indemnification, obligations upon receipt of public funds, etc. The options and potential legal implications will need to be examined.
- Parties that join together to form an HIE may include one or more tax-exempt entities. Tax-exempt organizations are limited in their ability to provide financial or other benefits to a private individual or entity. These laws must be addressed in structuring a regional HIE and deciding terms of participation.
- The physician self-referral (Stark) and Anti-Kickback statutes must be considered in structuring an HIE, to ensure that health systems and physicians can work together in developing an effective HIE without being in conflict.

## Legal issues related to transfer of data:

- This phase is a continuation of a current provider-to-provider transfer of health information; the only change is in the mode of transfer. Changing the mode of transfer should not violate current HIPAA privacy requirements, including requirements for use and disclosure of protected health information, *and the exercise by patients of their right to request access, amendment, restrictions, and an accounting of disclosures of their health information.* Likewise, there should be no change in the responsibilities of sending and receiving providers to provide patients access to their medical records under the state Medical Records Access Act.
- Moving from paper-based information and processes to electronic-based information and processes requires risk analysis and compliance with HIPAA security rules. Some providers may need to comply for the first time, while other providers will need to review new technological uses to ensure security safeguards are adequate to address any new or increased risk associated with the security of electronic protected health information.
- This phase has both the potential to increase exposure to liability and to reduce exposure.
  - Risk of liability for medical malpractice is reduced by timely receiving information, eliminating multiple (and possibly inconsistent) reports.
  - Going from paper to electronic information and transfer potentially increases the risk for privacy / security breaches, and the scope of the impact of a breach (e.g. many patients vs. one patient).
  - There is increased potential for liability for each step added to the system (e.g. potential for errors when health information is electronically transferred through an interface to directly populate an EMR).
  - The potential for liability is decreased when automation increases the quality and timeliness of the patient information and thereby reduces medical errors.
- There is a potential for liability of the HIE in an action brought by the physician or patient (under a third party beneficiary theory) if electronic protected health information is not transferred in accordance with the terms of the agreement between providers and the HIE. While there is the potential for a patient bringing a breach of privacy claim under common law or state law, a patient has no private cause of action for HIPAA violations.

## Technical Challenges / Issues

For more details regarding overall technical issues and resources see Appendix H: Technology Overview

- Clinical data must be safeguarded to preserve confidentiality and privacy. A broad array of mature technology exists to protect data in transit. These technologies are implementation dependent.
- Authentication of clinicians and other designated users is needed in order to provide sufficient identifying credentials to gain access to the results delivery system.
- Need to create reliable, temporary data storage, which will facilitate disaster recovery and audits of access to records.



- A provider index is needed as well as a maintenance process for keeping the information up to date. Information necessary to identify and deliver information to clinicians must remain up-to-date for the system to function appropriately. Processes for maintaining provider information (including name, telephone, fax, and physical location) need to be established.
- Messaging standards (including confirmation of delivery) need to be implemented in order to maximize the value of results delivery and lay a foundation for future health information exchange activities based on standard methods for transmitting data.
- Must negotiate, in each region, the non-functional requirements such as required turnaround time, retention period, and other business model issues.

### *Financial Challenges / Issues (Revenue, Savings, and Costs)*

#### Phase A - Stage 1

##### Revenue

- The HIE will charge for the results delivery services based on the characteristics, the size of the organization, the volume and scope of the results and the interfaces that must be developed. One time services such as interfaces would usually be charged for on a project basis unless the HIE chooses to amortize those expenses over the length of their contract. This, of course, will require the HIE to raise more working capital to finance these services. The revenue structure for these initial results delivery services may be different between sponsors and clinical service providers who are just using the services. Most frequently the general customers of the HIE will be asked to pay for the services on a monthly subscription basis or a combination of subscription and transaction fee basis.

##### Savings

- Other established HIEs have reported the costs of the result delivery process, prior to the HIE being active, to be between \$.75 and \$1.25 per report. The HIE charges (now that they are active), were reported by Indiana Health Information Exchange (IHIE) in Indianapolis at between \$.17 and \$.35 per report. These fees are most frequently paid by the clinical service providers whose results are being delivered by the new more efficient service of the HIE.
- A complete review of current result delivery processes and the costs of result delivery at each clinical service provider will provide the foundation to determine the size and scope of the benefits that would be available. This will only be determined on an HIE by HIE basis. One should not overlook the costs/benefits of the reduction or elimination of the 'call back' process both at the physician offices and in the various departments within the clinical service provider. Additionally, the increase in customer service to the ordering physician and to the patient should not be overlooked either. Measurements should be identified and reports developed as part of the justification and ongoing confirmation of benefits.

##### Costs

- The working capital needed should include the cash flow required for the ramp up of adding new clients and the slope of volumes, if pricing is on a transaction basis.
- It is unclear exactly how much start up and working capital is needed for Phase A. Estimates which are quite frequently discussed are numbers between 1 and 2 million dollars. The annual operating costs for a Phase A results delivery HIE in a large region of approximately 500,000 patients should range between \$2.5 to \$4.0 million dollars per year when fully operational. These costs may or may not include the amortization of hardware and software depending, on the specific vendor selected, the

pace of the implementation, in- sourced or outsourced technical services and any other specific characteristics of the product and service (e.g. business interruption services).

- Clinical service provider interface costs to the HIE may be addressed by a number of different financing methods in order to align benefits and costs. Ongoing maintenance of the interfaces would be facilitated by the HIE but paid for by the clinical service providers.

#### Phase A - Stage 2

- Most of the financial challenges described in Phase A – Stage 1 apply here as well.
- The interfaces from the clinical service providers to physician practice EMRs and to physician practice e-Prescribing systems provide opportunities for reducing costs and enhancing physician practice HIT adoption and interoperability with physician practices. The charges for this service should be incurred by those who benefit. The principle discussions on this topic revolve around a shared cost by the clinical service providers and the physician practices, however this revenue structure has yet to be implemented in a functioning HIE.
- The payment for these services could be shared across all clinical service providers and the physicians requesting them or in a number of other options. We expect substantial savings (up to 60 percent over current point to point options) from this shared interface development service provided by the regional HIE.



### Phase B

#### Aggregating Each Patient's Data for Care, Quality & Patient Safety



**Future:**  
Assembling patient records from multiple sources for viewing patient history

### Phase B: Aggregating Each Patient's Data for Care, Quality and Patient Safety

There are two stages within Phase B. The first stage aggregates the results information (delivered in Phase A) into a repository to create a more comprehensive view of a patient's past care. The second stage integrates the patient's data from the physician's EMR into the aggregated repository to ensure more comprehensive patient data.

The creation of an aggregated patient summary was considered the number one priority of all workgroup volunteers and addresses many of the critical issues highlighted by the Clinical Workgroup. While there are many benefits from having a comprehensive view of the patient's past care there are also complex issues in the debate about who will pay for these services.

#### Stage 1 - Current State

Today a patient's medical history may be spread out across several different information systems and organizations. A comprehensive view of a patient's past care requires the time-consuming request and review of multiple paper charts, and is highly prone to both missing information and transcription error. This is especially crucial in emergency care where the lack of timely access to aggregated and standardized patient care data can lead to decreased health care quality and patient safety. An example of the current state is described below.

#### Stage 1 - Today's Scenario

Jane arrives at the Emergency Department (ED) with her niece. She is lethargic and confused and the niece can offer only limited information. The patient is a widow living alone at home who overall is functioning well until she calls the niece and sounds somewhat confused and out of breath. When the niece arrived, she found Jane in her current state. An ambulance was called and the patient transported. Unfortunately, the niece is not aware of what medications her aunt is currently taking or her medical history. When Jane arrives at the hospital she is noted to be feverish, minimally conversant, and short of breath. Diagnostic tests suggest that the patient has an infection and a chest x-ray confirms she has pneumonia.

Without having the patient's history available the emergency room physician needs to get her started on an antibiotic in anticipation of admission. Jane is given a commonly used intravenous antibiotic that she, unfortunately, is allergic to. This causes a moderate allergic reaction that prolongs her stay, causes many additional tests to be performed and at the least, causes Jane some discomfort and inconvenience and adds to her recovery time.

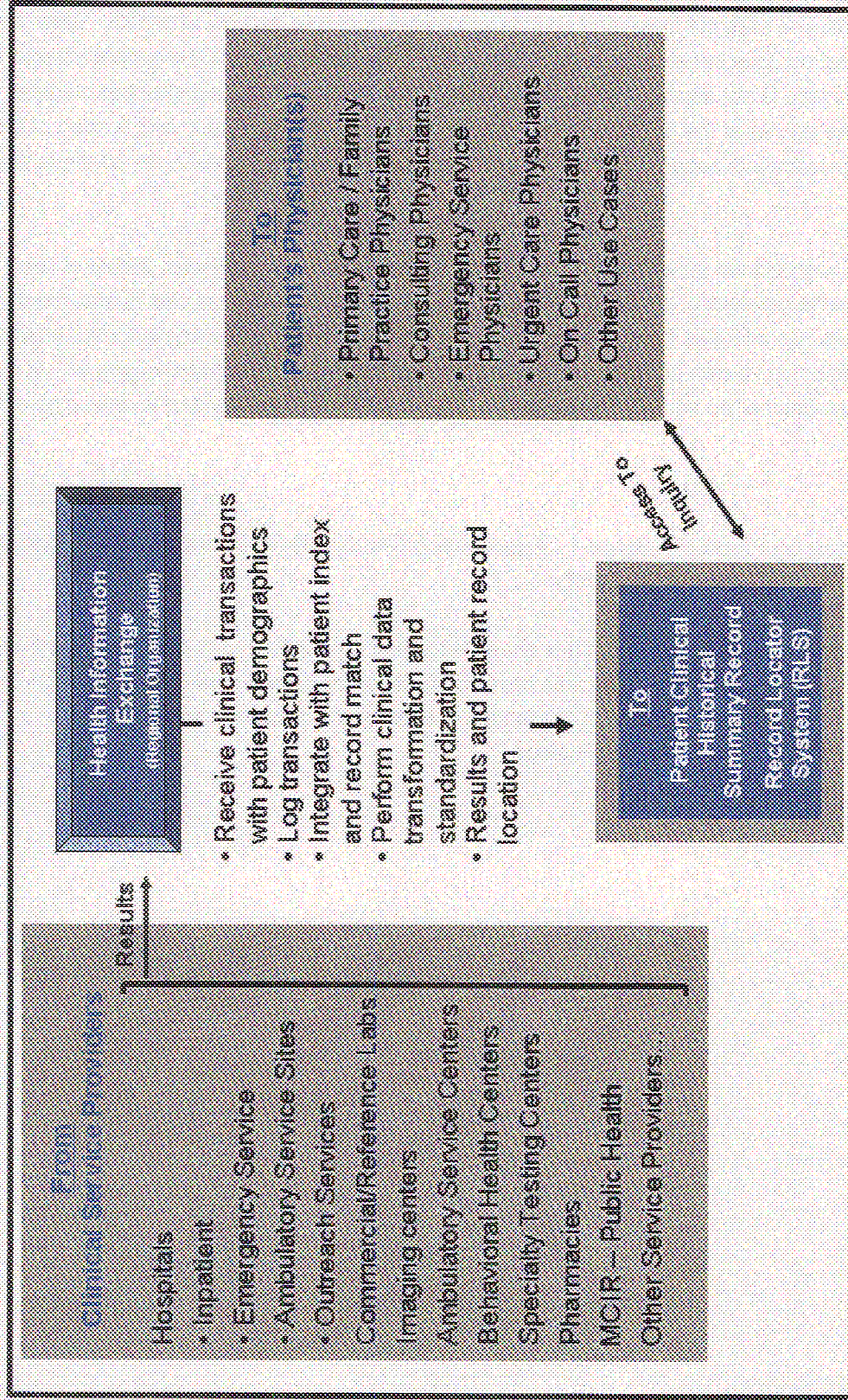
The current state example described above is not the "best practice" for patient care. The recommended changes to streamline the current process are described below in Stage 1 – Future State.

### ***Stage 1 - Future State***

All medical information is sufficiently aggregated and standardized to facilitate retrieval of information at the point of care. Standardization would include vocabulary standardization, master patient index and many system interfaces. This information would be accessible to not only the patient's pre-authorized physicians, but to a treating Emergency Department physician as well. Additionally, since this information is stored with the ability to query data, public health items such as disease surveillance can be performed. Allowing information to be imported automatically provides many benefits: import into medical record systems reduces costs and transcription errors; into clinical (and patient) decision support systems automates quality and safety alerts and reminders; and into public health surveillance and management systems facilitates automatic outbreak detection and management of public health emergencies.



Diagram F: Phase B - Stage 1 - Aggregating Clinical Service Provider Data for Quality and Patient Safety



Note: One or more Clinical Service Providers in a region may already have databases and provide inquiry services within their organization. However, the high priority issues from the Clinical Workgroup delineated the need for inquiry access to patient history across all Clinical Service Providers not just one. Today, in order to get all the information necessary multiple sign-ons are needed. Ultimately, what is needed is a comprehensive view with only one sign-on.



### ***Stage 1 - Tomorrow's Scenario***

Jane arrives at the Emergency Department (ED) with her niece. She is lethargic and confused and the niece can offer only limited information. The patient is a widow living alone at home who overall is functioning well until she calls the niece and sounds somewhat confused and out of breath. When the niece arrived she found Jane in her current state. An ambulance was called and the patient transported. Unfortunately, the niece is not aware of what medications her aunt is currently taking or her medical history. When Jane arrives at the hospital she is noted to be minimally conversant, and is short of breath with a fever. Diagnostic tests suggest that the patient has an infection and a chest x-ray confirms she has pneumonia.

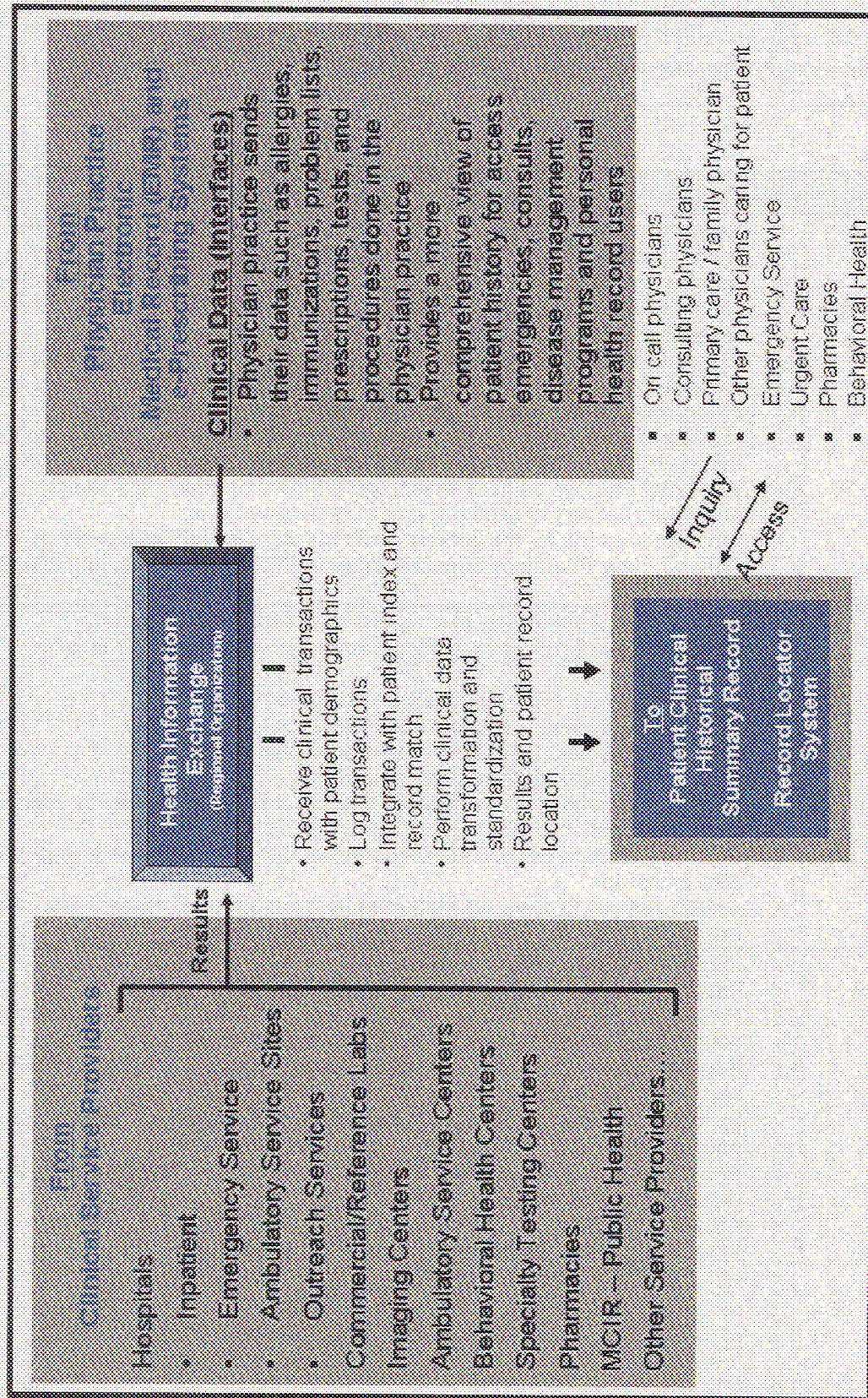
The ED physician has decided on admission and to start an antibiotic. The physician accesses the regional HIE where he notes all of Jane's medications, who her primary care physician is and, most importantly, that she has allergies to specific antibiotics. With this in mind, he arranges for the hospital admission, with the patient's own primary care physician, is able to make sure that she gets all her routine medications, and places her on an appropriate antibiotic. Jane improves quickly and is able to go home in a few days.

### **Stage 2: Building Upon Phase B – Stage 1 - Aggregating Clinical Service Provider and Physician Practice Data for Quality and Patient Safety**

An additional step that can be added within this phase is to send aggregated data out to all contributing sources. This closes the loop so that all parties have comprehensive patient data without having to access an additional application. Technical challenges of building the interfaces back to each contributing data source will increase, in this stage.



Diagram G: Phase B - Stage 2 - Aggregating Clinical Service Provider and Physician Practice Data for Quality and Patient Safety





### **Impact of Phase B: Aggregating Data**

The impact of aggregating data is a significant change providing benefits to the beneficiaries. The following table displays the benefits of aggregating data and also demonstrates who benefits. Some beneficiaries have stronger benefits than others due to the type of information being exchanged or the direction of the flow.

Beneficiaries	Benefits
Clinical Service Providers (e.g. hospitals, laboratories, image centers and specialty testing centers)	<ul style="list-style-type: none"><li>• Reduces unnecessary admissions or costly ED workups on patients with known histories and frequent ED visits citizens shopping for Medications.</li><li>• Reduces inappropriate care, unnecessary testing and avoidable risks when a patient's prior history is available to urgent care centers, emergency service departments and other triage sites.</li><li>• Improves care and reduces risk on patients who are in the care or in disease management programs or chronic care coordination programs if the patient history across the community is available to them.</li><li>• Provides a comprehensive record of patient history including medication history that would help hospitals with the medication reconciliation process</li><li>• Improves reliability, and timeliness, and provides a uniform high quality automated delivery of secure and comprehensive views</li><li>• Provides a vehicle for the delivery of clinical data and medication history from National Labs, Pharmacy Benefit Managers, Pharmacy Chains, and referral centers</li></ul>
Physicians	<ul style="list-style-type: none"><li>• Provides the ability to view a comprehensive record of medications, laboratory results, allergies, procedures and other information related to a specific patient</li><li>• Decreases time looking for data and information</li><li>• Provides timely results retrieval and notification to the clinician</li><li>• Reduces adverse drug-drug or drug-allergy interactions</li><li>• Reduces redundant lab tests and procedures</li><li>• Enhances communications between multiple providers who may be caring for a single patient</li><li>• Improves ability to analyze patient-centered data to identify and re-engineer care processes</li><li>• Assists patients to conserve resources from not having to repeat tests, spend extra time with referrals and come back for follow up</li></ul>
Patients and Families	<ul style="list-style-type: none"><li>• Improves patient safety</li><li>• Improves controls on privacy and confidentiality</li><li>• Provides to the care provider the patient's medical history, so the patient does not have to repeat it several times to different care providers</li><li>• Reduces repeat testing, time delays, discomfort and additional coinsurance and deductible charges</li><li>• Increases confidence in the provider environment due to their access to the patient history</li><li>• Provides opportunities for the system to communicate special protocols and disease management programs</li><li>• Allows the capability to provide the patient a copy of the work performed on this encounter and the previous history</li></ul>

Beneficiaries	Benefits
Public Health	<ul style="list-style-type: none"> <li>Provides benefits similar to physicians (increased delivery time of results, reduction in errors, etc.)</li> <li>Allows for electronic communicable disease reporting (e.g., lead toxicity, HIV, sexually transmitted diseases)</li> <li><i>Facilitates data population for disease surveillance, clinical registries, and chronic disease management</i></li> </ul>
Health plans, Insurers, Employers, Government Health plans	<ul style="list-style-type: none"> <li>Reduces the claims from duplicate/repeat testing and treatment</li> <li>Provides opportunities to enhance patient safety and thus reduce errors and additional cost due to availability of patient history</li> <li>Reduces unnecessary risks of errors due to availability of history, allergies, and medication history</li> <li>Reduces ED visits and hospitalizations</li> </ul>

### **Challenges of Phase B**

The most critical legal, technical and financial challenges in making data available are detailed below. In order for this phase to succeed, these challenges will need to be addressed.

#### *Legal Challenges / Issues*

Legal issues related to the formation organization of a HIE:

- Same issues listed in Phase A.
- There is potential for intellectual property rights issues to arise from the creation of the system. Intellectual property issues are more likely to arise in Phase B, especially with regard to who owns the processes for receiving, transforming, and transmitting data.
- Unlike Phase A, Phase B involves the standardization of data elements, raising the potential for the HIE to be a "covered entity," subject to the HIPAA privacy and security rules. This status is of concern because the HIE would then be accountable directly to patients who wish to exercise their rights (e.g. rights to access information, request amendments, request restrictions, etc.) In Phase A, patients would exercise their rights with their health care providers.

Legal issues related to transfer of data:

- This phase has both the potential to increase exposure to liability and to reduce exposure to liability.
  - Potential liability could increase for both HIE and participating health care providers regarding transfer of data because Phase B involves transformation/standardization of data and data availability to multiple providers.
  - The HIE could experience potential exposure to liability for errors that negatively impact the patient, e.g. failure to timely transfer data, errors in standardization. The HIE could also experience potential exposure to action brought by a sending or receiving health care provider, or by a patient who is harmed under third party beneficiary theory.
  - Risk of liability for medical malpractice may be reduced because of better patient outcomes from efficient and timely receipt of data needed for treatment, and potential reduction in errors due to automation.

- Providers could experience potential for increased malpractice exposure based on increase in information available, failure to obtain information that might have improved patient outcome, flaw in system e.g. injury results from relying on data associated with wrong patient, incomplete or inaccurate data.
- Unlike Phase A, Phase B allows clinical service providers to query and retrieve stored data from multiple providers. As the complexity of the system increases, so does the challenge of providing adequate security safeguards under HIPAA. HIPAA security compliance is an on-going process. As technology increases or changes, covered entities must conduct an assessment of the potential risks and vulnerabilities to the confidentiality, integrity, and availability of electronic protected health information held by the entity, and implement sufficient administrative, physical, and technical safeguards to protect information that the covered entity creates, receives, or maintains. Security issues in this phase include:
  - Identification / Correlation of Data with Patient
    - A master patient index based on social security numbers will not be appropriate per the state Social Security Number Privacy Act, which limits the collection and use of social security numbers. Even if the law allows this use, it is unlikely to be acceptable to the public given recent concerns about identity theft.
  - Authentication (determining that person attempting access to data is who they claim to be.)
  - Ensuring integrity of data, i.e. that data has not been altered or destroyed in an unauthorized manner.
- Patients should be able to control access to their health information by having the opportunity to "opt-out" of HIE. If patient "opts-out", this should result in excluding the patient's health information from HIE completely. Participant providers and HIEs would be unduly exposed for inadvertent breach should the patient's request restrictions on disclosure for only some of their health information. When the patient has directed that certain information be excluded from the record or declines to participate in HIE, provide malpractice protection against related claims.
- As the complexity of systems increase, so does the challenge of providing adequate privacy safeguards under HIPAA and other privacy laws. Examples of privacy challenges in this phase:
  - HIPAA permits the sharing of protected health information for purposes of treatment, payment and healthcare operations. While information may be freely shared for treatment purposes, disclosures for most other purposes must be limited to the minimum amount necessary to accomplish the purpose of the disclosure. The ability to parse electronic records transmitted through an HIE to comply with this limitation may be limited.
  - State law regarding privacy and security may restrict access to certain types of health information (e.g. mental health, HIV/AIDS, substance abuse), even for treatment purposes, absent written consent. However, written consent is not required for a bona fide medical emergency. Federal law also imposes significant additional restrictions on the use and disclosure of certain records related to treatment for drug and alcohol addiction. It may be challenging to establish an effective way of identifying sensitive records and creating access rules that permit compliance with these requirements.
  - Under HIPAA and the state Medical Records Access Act, a parent has the right to access the health information of their child. However, there are exceptions where the law grants a minor the right to consent to certain treatment without a parent's knowledge or permission. These



include health care provided to an emancipated minor, a limited number of outpatient mental health visits for minors age 14 and older, diagnosis and treatment for substance abuse, HIV/AIDS and other sexually transmitted diseases, family planning services funded by Title X, and abortion services where a judge has granted consent through the judicial bypass process.

- As the complexity of the system increases, so does the challenge of responding to the patient's exercise of his or her rights under HIPAA regarding their health information. Individuals may request, and are entitled to, a timely accounting/report regarding the inquiries made to request their health data, what data was requested, if any requests were denied, and the reason for any denials. Health information disclosed for treatment is an exception to the accounting requirement. However, system design will need to be able to track disclosures for public health and many other potential purposes.

#### *Technical Challenges / Issues*

The technology needed will expand from Phase A. For more details regarding overall technical issues and resources see Appendix H: Technology Overview.

- Create a methodology to determine unique patient identifiers (master patient index)
- Determine and implement a record locator service – today there is not a concrete technology
- Develop vocabulary mapping services in order to ensure correct mapping of like services, results, etc.
- Develop and refine messaging standards
- Manage the addition of interfaces
- Requires increased robustness of network (for storage, increased speed, disaster recovery, etc.)

#### *Financial Challenges / Issues*

##### **Revenue**

- Frequent consideration for the payment for these services is a base subscription involving the size of the population and utilization of the health care system and then a per person / per month or per person / per enrollee fee. Fees that have been considered previously (by other functioning HIEs) include ranges from ten cents to fifty cents per member per month based on specific characteristics of the population and the scope of services offered by the regional exchange.

##### **Savings**

- Unclear at this point specifically which stakeholders would value this information enough to pay for the building and maintenance of these data repositories along with all the effort involved in preparing the data and matching the records for it's beneficial use. The range of beneficiaries is wide and varied.
- Other possibilities include gain sharing or paying a portion of the benefits from improved services, lower costs and less utilization on many fronts. Certainly, the possibilities of quality measures and increased preventative services have entered into the equation as well.



### **Phase C: Empowering Michigan Citizens**

After the implementation of the previous two views, Michigan will have the prerequisite infrastructure to export the patient's data to a personal health record (PHR) on an ongoing basis as the patient is engaged in health service activity such as ER visits, filling medications, obtaining laboratory tests, x-rays or other health care services. PHR is an HIT-related software application which individuals can use to maintain and manage their health information in a private, secure and confidential environment. The PHR may be offered by an insurer, employer, or authorized care provider of the patient's choice. The individual consumer is the primary user of the PHR and authorizes access to their personal health information via the PHR. That consumer may allow access to all or part of the PHR to anyone - a doctor, family member, employer, summer camp, or insurance company. Other potential PHR users are "stakeholders" who - when the primary user of the PHR gives his or her permission - can make valuable use of the information being kept in the personal health record.<sup>4</sup>

As patients begin to take a much more active role in health care treatment decisions, it becomes important to empower them with access to and control over their personal health information. This phase is very complex and the least widely implemented. Today, there still remains a lack of widespread awareness of PHR benefits, challenges, or requirements. In addition to the provision of clinical data to their PHR, the patient may choose to provide data to other clinical providers (e.g. disease management programs or the newly formed chronic care coordination programs that have been developed under CMS's direction). Further it is reported that home based monitoring and health management assistance will be a growing component of the opportunities for patients to explore. These programs introduce a whole new level of patient information to accumulate and share with care givers.

#### ***Phase C - Today's Scenario***

Tom is an insulin-dependent diabetic who is recording his diabetic information in a notebook. He has a visit with the diabetic nurse at the endocrinologist's office and brings along his notebook. The nurse takes the notebook and begins writing details from it into Tom's medical record.

#### ***Phase C - Tomorrow's Scenario***

Tom is documenting his diabetic information in an electronic personal health record. At his place of employment, he wants to enroll in a new health and wellness program being offered. As part of the

<sup>4</sup> Markle Foundation, Connecting for Health: A Private-Public Foundation. "The Personal Health Working Group Final Report on Personal Health Records" July 1, 2003. [http://www.markle.org/downloadable\\_assets/final\\_phwg\\_report1.pdf](http://www.markle.org/downloadable_assets/final_phwg_report1.pdf)

program, they have a diabetic nurse and nutritionist coming in every other Wednesday. Tom gives the nurse authorization in order to view his diabetic information prior to Tom's initial visit.



Diagram H: Phase C - Empowering Michigan Citizens

